

REMARKS

Claims 1-16 are pending in the Application. Claims 1-16 are rejected under obviousness-type double patenting. Claim 16 is rejected under 35 U.S.C. §101. Claims 1-3, 8-10 and 13-16 are rejected under 35 U.S.C. §102(e). Claims 4-7, 11 and 12 are indicated as containing allowable subject matter. Applicants address these rejections below.

I. OBVIOUSNESS-TYPE DOUBLE PATENTING:

The Examiner has rejected claims 1-16 based on obviousness-type double patenting in view of claims 1-23 of U.S. Patent No. 6,948,093 and in view of claims 1-47 of U.S. Patent No. 6,993,537. Office Action (4/30/2008), page 3. While the Examiner rejects claims 1-16 based on obviousness-type double patenting, the Examiner asserts that claims 1-23 of U.S. Patent No. 6,948,093 contain every element of claims 1-16 of the instant application and that claims 1-47 of U.S. Patent No. 6,993,537 contain every element of claims 1-16 of the instant application. *Id.* Applicants request clarification as to whether claims 1-16 are rejected under statutory double patenting or obviousness-type double patenting pursuant to 37 C.F.R. §1.104(c)(2).

Applicants respectfully assert that claims 1-16 are not properly rejected under obviousness-type double patenting. In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is—does any claim in the application define an invention that is merely an obvious variation of an invention claimed in the patent? M.P.E.P. §804. A double patenting rejection of the obviousness-type is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. §103" except that the patent principally underlying the double patenting rejection is not considered prior art. *In re Braithwaite*, 379 F.2d 594, 154 U.S.P.Q. 29 (C.C.P.A. 1967); M.P.E.P. §804. Therefore, any analysis employed in an obviousness-type double patenting rejection parallels the guidelines for analysis of a 35 U.S.C. §103 obviousness determination. *In re Braat*, 937 F.2d 589, 19 U.S.P.Q.2d 1289 (Fed. Cir. 1991); *In re Longi*, 759 F.2d 887, 225 U.S.P.Q. 645 (Fed. Cir. 1985).

Since the analysis employed in an obviousness-type double patenting determination parallels the guidelines for a 35 U.S.C. §103(a) rejection, the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. §103 are employed when making an obvious-type double patenting analysis. M.P.E.P. §804. However, the Examiner has not made any such inquiry. The Examiner has not made any factual inquiries (1) to determine the scope and content of a patent claim and the prior art relative to a claim in the application at issue; (2) to determine the differences between the scope and content of the patent claim and the prior art as determined in (1) and the claim in the application at issue; (3) to determine the level of ordinary skill in the art; and (4) to evaluate any objective indicia of nonobviousness. M.P.E.P. §804. Any obviousness-type double patenting rejection should make clear the differences between the inventions defined by the conflicting claims—a claim in the patent compared to a claim in the application. M.P.E.P. §804. Further, any obviousness-type double patenting rejection should include reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim in issue is an obvious variation of the invention defined in a claim in the patent. M.P.E.P. §804. The Examiner has not made clear the differences between the inventions claimed in the application and the claims in the cited patents. Consequently, in view of the foregoing, the Examiner has not provided a basis for an obviousness-type double patenting rejection of claims 1-16. Thus, the rejections of claims 1-16 under obviousness-type double patenting are improper.

II. REJECTIONS UNDER 35 U.S.C. §101:

The Examiner has rejected claim 16 under 35 U.S.C. §101 as being directed to non-statutory subject matter. Office Action (4/30/2008), page 4. As indicated above, Applicants amended claim 16 to be directed to a computer program product embodied in a computer readable medium. Accordingly, claim 16 is directed to statutory subject matter. Applicants respectfully request the Examiner to withdraw the rejection to claim 16 under 35 U.S.C. §101.

III. REJECTIONS UNDER 35 U.S.C. 102(e):

The Examiner has rejected claims 1-3, 8-10 and 13-16 under 35 U.S.C. §102(e) as being anticipated by Novick (U.S. Patent No. 7,096,382). Applicants respectfully traverse these rejections for at least the reasons stated below and respectfully request the Examiner to reconsider and withdraw these rejections.

For a claim to be anticipated under 35 U.S.C. §102, each and every claim limitation must be found within the cited prior art reference and arranged as required by the claim. M.P.E.P. §2131.

Applicants respectfully assert that Novick does not disclose "using a restore process to restore data items to the primary copy from the secondary copy within a recovery unit of work, wherein data items restored to the primary copy of the data repository within the recovery unit of work are made inaccessible to processes other than the restore process until commit of the recovery unit of work" as recited in claim 1 and similarly in claims 13, 15 and 16. The Examiner cites column 9, lines 37-59 and column 12, lines 57-63 of Novick as disclosing the above-cited claim limitations. Office Action (4/30/2008), page 5. Applicants respectfully traverse.

Novick instead discloses that the intra-sequence order of the data records 132 within a stream of data 120 is at least partially a material feature of the processing job 106. Column 9, lines 37-39. Novick further discloses that the inter-sequence order of data records 132 between some of the streams of data 120 may be at least partially a material feature of the corresponding information processing jobs 106. Column 9, lines 39-43. Additionally, Novick discloses that if the data records 134 are not written to the information storage devices 22 in the appropriate order, the integrity of the information may be adversely affected. Column 9, lines 46-49. Furthermore, Novick discloses that the overall order in which the data records 132 are received by the data switching facility 104 is designated by the letter T followed by a numeral that represent the inter-sequence order of the data records 132. Column 9, lines 52-56. In addition, Novick discloses that the backup and recovery servers 30 check the storage addresses where the backup information records 64 are to be written to. Column 12, lines 57-60. Further, Novick discloses that the backup information records 64 that are

not being sent to the same data storage devices 32 are written in parallel, not necessarily according to the order of their order stamps 162. Column 12, lines 60-63.

Hence, Novick discloses that in the data backup and recovery system, the data records within a stream of data must be written to the information storage devices in the appropriate order. Further, Novick discloses that the backup information records that are not being sent to the same data storage devices are written in parallel, not necessarily according to the order of their order stamps.

There is no language in the cited passages that discloses using a restore process to restore data items to the primary copy from the secondary copy within a recovery unit of work, where data items restored to the primary copy of the data repository within the recovery unit of work are made inaccessible to processes other than the restore process until commit of the recovery unit of work.

Thus, Novick does not disclose all of the limitations of claims 1, 13, 15 and 16, and thus Novick does not anticipate claims 1, 13, 15 and 16. M.P.E.P. §2131.

Applicants further assert that Novick does not disclose "prior to commit of the recovery unit of work, configuring the primary copy of the data repository to enable addition of data items to the data repository independent of said restore step and to enable processes other than the restore process to retrieve said independently added data items" as recited in claim 1 and similarly in claims 13, 15 and 16. The Examiner cites column 12, lines 57-63 of Novick as disclosing the above-cited claim limitations. Office Action (4/30/2008), page 5. Applicants respectfully traverse.

As stated above, Novick instead discloses that the backup and recovery servers 30 check the storage addresses where the backup information records 64 are to be written to. Column 12, lines 57-60. Further, Novick discloses that the backup information records 64 that are not being sent to the same data storage devices 32 are written in parallel, not necessarily according to the order of their order stamps 162. Column 12, lines 60-63.

Hence, Novick discloses that the backup information records that are not being sent to the same data storage devices are written in parallel, not necessarily according to the order of their order stamps.

There is no language in the cited passage that discloses configuring the primary copy of the data repository to enable addition of data items to the data repository independent of the restore step. Neither is there any language in the cited passage that discloses configuring the primary copy of the data repository to enable addition of data items to the data repository independent of the restore step prior to commit of the recovery unit of work. Neither is there any language in the cited passage that discloses to enable processes other than the restore process to retrieve the independently added data items.

Thus, Novick does not disclose all of the limitations of claims 1, 13, 15 and 16, and thus Novick does not anticipate claims 1, 13, 15 and 16. M.P.E.P. §2131.

Applicants further assert that Novick does not disclose "in response to successful completion of the restore step, committing the recovery unit of work including releasing said inaccessibility of the restored data" as recited in claim 1 and similarly in claims 13, 15 and 16. The Examiner cites column 13, lines 7-11 and 30-50 of Novick as disclosing the above-cited claim limitations. Office Action (4/30/2008), page 5. Applicants respectfully traverse.

Novick instead discloses that each sequence completion serves as a point of synchronization between the information processing site 12 and the information backup and recovery site 14, or as a point of consistency of the backup information received at the information backup and recovery site 14. Column 13, lines 7-11. Novick further discloses that the order by which the backup information records 64 are stored in the information storage devices 32 is immaterial. Column 13, lines 32-34. Additionally, Novick discloses that the backup information records 64 and the corresponding order stamps 162 are stored in the data storage devices. Column 13, lines 36-38. Further, Novick teaches that alternatively, the order stamps 162 are stored separately from the backup information records 64, for example, in a separate file or even in a separate information storage device 32, and are associated with their

respective backup information records 64, for example, with a pointer embedded in each order stamp 162 pointing to the respective backup information record 64. Column 13, lines 38-44.

Hence, Novick discloses that each sequence completion serves as a point of synchronization between the information processing site and the information backup and recovery site. Further, Novick discloses that the backup information records and the corresponding order stamps are stored in the data storage devices.

There is no language in the cited passages that discloses committing the recovery unit of work including releasing the inaccessibility of the restored data. Further, there is no language in the cited passages that discloses committing the recovery unit of work including releasing the inaccessibility of the restored data in response to successful completion of the restore step.

Thus, Novick does not disclose all of the limitations of claims 1, 13, 15 and 16, and thus Novick does not anticipate claims 1, 13, 15 and 16. M.P.E.P. §2131.

Claims 2-3 and 8-10 each recite combinations of features of independent claim 1, and hence claims 2-3 and 8-10 are not anticipated by Novick for at least the above-stated reasons that claim 1 is not anticipated by Novick.

Claims 14 recites the combinations of features of independent claim 13, and hence claim 14 is not anticipated by Novick for at least the above-stated reasons that claim 13 is not anticipated by Novick.

Claims 2-3, 8-10 and 14 recite additional features, which, in combination with the features of the claim upon which they depend, are not anticipated by Novick.

For example, Novick does not disclose "wherein maintaining the secondary data copy comprises storing a backup copy of the data repository and storing log records describing updates to the primary copy performed since the backup copy was stored; wherein recreating the primary copy of the data repository includes the step of copying data repository definitions from the backup copy and applying the definitions to recreate the primary copy; and wherein restoring data items to the primary copy comprises copying data items from the backup copy and replaying the log records to

identify and reapply updates to the primary copy" as recited in claim 2. The Examiner cites column 13, lines 12-29 of Novick as disclosing the above-cited claim limitations. Office Action (4/30/2008), page 5. Applicants respectfully traverse.

Novick instead discloses that in case of a failure of the backup and recovery site 14 during the process of writing backup information records 64 to the information storage devices 32, an internal recovery process can employ the information stored in the temporary memory 186, especially when implemented in non-volatile memory or as a log file in the disk storage system, to recover backup information up and until the latest backup information record 64 in the temporary memory 186 for which the sequence of order stamps 162 is complete. Column 13, lines 12-21. Further, Novick discloses that the information recovery process, which follows a failure of the information processing site 12, can recover the information up to the latest backup information record 64, which may still reside in the temporary memory 186, provided that information consistency is preserved, for example, up and until the latest backup information record 64 for which the sequence of order stamps is complete. Column 13, lines 22-29.

Hence, Novick discloses that in the case of a failure of the backup and recovery site during the process of writing backup information records to the information storage devices, an internal recovery process can employ the information stored in the temporary memory, to recover backup information up and until the latest backup information record in the temporary memory for which the sequence of order stamps is complete. Novick further discloses that the information recovery process can recover the information up to the latest backup information record provided that information consistency is preserved.

There is no language in the cited passage that discloses storing log records describing updates to the primary copy performed since the backup copy was stored. Neither is there any language in the cited passage that discloses copying data repository definitions from the backup copy. Neither is there any language in the cited passage that discloses applying the definitions to recreate the primary copy. Neither is there any language in the cited passage that discloses that restoring data

items to the primary copy comprises copying data items from the backup copy and replaying the log records to identify and reapply updates to the primary copy.

Thus, Novick does not disclose all of the limitations of claim 2, and thus Novick does not anticipate claim 2. M.P.E.P. §2131.

Applicants further assert that Novick does not disclose "replaying the log records of operations performed on data items within the primary copy of the data repository; caching log records relating to operations performed under syncpoint control within an original unit of work; determining from the cached log records the state of the original units of work at the time of the failure; and determining which of said syncpoint-controlled operations to perform within the recovery unit of work based on the determined state of the original units of work" as recited in claim 3. The Examiner cites column 13, lines 12-21 and column 13, line 55 – column 14, line 18 of Novick as disclosing the above-cited claim limitations. Office Action (4/30/2008), page 6. Applicants respectfully traverse.

As stated above, Novick instead discloses that in case of a failure of the backup and recovery site 14 during the process of writing backup information records 64 to the information storage devices 32, an internal recovery process can employ the information stored in the temporary memory 186, especially when implemented in non-volatile memory or as a log file in the disk storage system, to recover backup information up and until the latest backup information record 64 in the temporary memory 186 for which the sequence of order stamps 162 is complete. Column 13, lines 12-21. Novick further discloses that the backup processes enable the information processing site 12 to transmit the storage I/O requests 62 to the information backup and recovery site 14 without any delay, greatly reducing the possibility that storage I/O requests 62 are awaiting transmission to the information backup and recovery site 14 and are thus lost. Column 13, lines 56-62.

Hence, Novick discloses that in the case of a failure of the backup and recovery site during the process of writing backup information records to the information storage devices, an internal recovery process can employ the information stored in the temporary memory, to recover backup information up and until the latest

backup information record in the temporary memory for which the sequence of order stamps is complete. Novick further discloses that the backup processes enable the information processing site to transmit the storage I/O requests to the information backup and recovery site without any delay.

There is no language in the cited passages that discloses replaying the log records of operations performed on data items within the primary copy of the data repository. Neither is there any language in the cited passages that discloses caching log records relating to operations performed under syncpoint control within an original unit of work. Neither is there any language in the cited passages that discloses determining from the cached log records the state of the original units of work at the time of the failure. Neither is there any language in the cited passages that discloses determining which of the syncpoint-controlled operations to perform within the recovery unit of work. Neither is there any language in the cited passages that discloses determining which of the syncpoint-controlled operations to perform within the recovery unit of work based on the determined state of the original units of work.

Thus, Novick does not disclose all of the limitations of claim 3, and thus Novick does not anticipate claim 3. M.P.E.P. §2131.

Applicants further assert that Novick does not disclose "wherein data restored to the primary copy of the repository within the recovery unit of work is made inaccessible by setting a flag for each data item restored to the data repository, the flag indicating that the data item is not accessible" as recited in claim 8. The Examiner cites column 12, line 57 – column 13, line 50 of Novick as disclosing the above-cited claim limitations. Office Action (4/30/2008), page 6. Applicants respectfully traverse.

As stated above, Novick instead discloses that in the case of a failure of the backup and recovery site during the process of writing backup information records to the information storage devices, an internal recovery process can employ the information stored in the temporary memory, to recover backup information up and

until the latest backup information record in the temporary memory for which the sequence of order stamps is complete.

There is no language in the cited passage that discloses that the data restored to the primary copy of the repository within the recovery unit of work is made inaccessible. Neither is there any language in the cited passage that discloses that the data restored to the primary copy of the repository within the recovery unit of work is made inaccessible by setting a flag for each data item restored to the data repository, the flag indicating that the data item is not accessible.

Thus, Novick does not disclose all of the limitations of claim 8, and thus Novick does not anticipate claim 8. M.P.E.P. §2131.

Applicants further assert that Novick does not disclose "wherein the flag indicates a transactional state of the data item and wherein a process for retrieving data items from the repository is adapted to identify one or more predefined transactional states as inaccessible" as recited in claim 9. The Examiner cites column 9, lines 37-59 and column 12, lines 57-63 of Novick as disclosing the above-cited claim limitation. Office Action (4/30/2008), page 6. Applicants respectfully traverse.

As stated above, Novick instead discloses that in the data backup and recovery system, the data records within a stream of data must be written to the information storage devices in the appropriate order. Further, Novick discloses that the backup information records that are not being sent to the same data storage devices are written in parallel, not necessarily according to the order of their order stamps.

There is no language in the cited passages that discloses a flag that indicates a transactional state of the data item. Neither is there any language in the cited passages that discloses a process for retrieving data items from the repository is adapted to identify one or more predefined transactional states as inaccessible.

Thus, Novick does not disclose all of the limitations of claim 9, and thus Novick does not anticipate claim 9. M.P.E.P. §2131.

Applicants further assert that Novick does not disclose "wherein the flag comprises a byte value of a distinctive primary key allocated to the data item when

the data item is restored to the data repository, the byte value being selected from a range of values indicative of the transactional state of the data item" as recited in claim 10. The Examiner cites column 9, lines 37-59 of Novick as disclosing the above-cited claim limitations. Office Action (4/30/2008), page 7. Applicants respectfully traverse.

As stated above, Novick instead discloses that in the data backup and recovery system, the data records within a stream of data must be written to the information storage devices in the appropriate order.

There is no language in the cited passage that discloses a flag that comprises a byte value of a distinctive primary key allocated to the data item. Neither is there any language in the cited passage that discloses a flag that comprises a byte value of a distinctive primary key allocated to the data item when the data item is restored to the data repository. Neither is there any language in the cited passage that discloses a flag that comprises a byte value of a distinctive primary key allocated to the data item when the data item is restored to the data repository, the byte value being selected from a range of values indicative of the transactional state of the data item.

Thus, Novick does not disclose all of the limitations of claim 10, and thus Novick does not anticipate claim 10. M.P.E.P. §2131.

Applicants further assert that Novick does not disclose the limitations of claim 14. The Examiner asserts that the limitations of claim 14 are contained in claims 1, 2 and 3 and therefore have been addressed. Office Action (4/30/2008), page 7. Applicants respectfully point out that the limitations of claim 14 are different than the limitations of claims 1, 2 and 3, and respectfully request the Examiner to address the limitations of claim 14 pursuant to 37 C.F.R. §1.104(c)(2). The Examiner is reminded that in order to establish a *prima facie* case of anticipation, the Examiner must provide a single prior art reference that expressly or inherently describes each and every element as set forth in the claim. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Since the Examiner has not addressed these limitations, the Examiner has not established a *prima facie* case of anticipation in rejecting claim 14. M.P.E.P. §2131.

As a result of the foregoing, Applicants respectfully assert that not each and every claim limitation was found within Novick, and thus claims 1-3, 8-10 and 13-16 are not anticipated by Novick. M.P.E.P. §2131.

IV. ALLOWABLE SUBJECT MATTER:

Applicants thank the Examiner for the indication of allowability of claims 4-7, 11 and 12.

V. CONCLUSION:

As a result of the foregoing, it is asserted by Applicants that claims 1-16 in the Application are in condition for allowance, and Applicants respectfully request an allowance of such claims. Applicants respectfully request that the Examiner call Applicants' attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining issues.

Respectfully submitted,

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